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JOHN N. DALTON, GOVERNOR

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COVER: Great Horned Owl Family, by Judy Moos Welton, Upper Marlboro, Maryland

# Letters

### MORE ABOUT WRITERS

I believe that I could relate better to the articles in *Virginia Wildlife* if I knew something about the authors. Then, too, I think they deserve the recognition. Why not in a footnote give the place of residence, occupation and other contributions which they have made to *Virginia Wildlife* as well as other publications.

*William J. Sowder*
Farmville

*This is an idea that we have been kicking around for some time. Thanks for the suggestion.—Asst. Ed.*

### PERRY PHOTOGRAPHS

While leafing through some back issues of your magazine the other day I came across some pictures taken by Rick Perry in the June issue. I had intended to write you then to tell you how much I enjoyed them. I hope we can look forward to more of the same in the future.

*Patricia Hudson*
Richmond

*Rick's photographic ability is an example of the myriad talents of our Game Warden force!—Asst. Ed.*

### PRAISE FOR VIRGINIA

I have hunted deer in Virginia for a number of years with great success. I salute the Game Commission and the people of Virginia for such good wildlife management. Your magazine as well as your wildlife management is second to none. Keep up the good work.

*Wayne Jackson*
Greenville, Tennessee

### PINE GROSBEAK

All winter we have enjoyed feeding a group of unusual birds which we believe are the rare pine grosbeak. They feed on the balcony of our apartment in Leesburg. It was a special treat to read John Taylor's recent contribution on this beautiful bird.

*W. L. Collins*
Leesburg

### PRAISE FOR V.W.

I have enjoyed your magazine for one year now and would like to continue to do so. Having retired from the Navy and returned to my home in southern Illinois, I see no reason to give up this beautiful publication from the state of my ancestors — and the state I learned to love. Keep up the good work.

*G. H. Hudgins*
Illinois

# Editorial

### WILDLIFE HABITAT STILL A VITAL THEME

When President Franklin D. Roosevelt proclaimed a new national observance, Wildlife Restoration Week, in 1938, the nation had only recently learned an important environmental lesson from its disastrous Dust Bowl. It's now 42 years later, and the week, held this year March 16 through 22, is called National Wildlife Week. Once again, the theme — "Save A Place For Wildlife" — emphasizes habitat protection.

Over the years, National Wildlife Week themes have varied, from endangered species to "Save the Key Deer." Other themes have stressed environmental problems ("Chemical Pesticides Are Poison," in 1963 and "We All Need Clean Water," in 1977) and the importance of outdoor activities ("Protect Our Public Lands," in 1958 and "America Needs Outdoor Recreation," in 1964). In 1972 ecology was emphasized ("Ecology: A Wild Idea") and in 1966, with "Protect Natural Beauty," the focus was on aesthetics. But habitat protection has remained an important and recurring theme.

Robert Redford, environmental activist and film star, has been appointed honorary chairman of the 1980 National Wildlife Week. Redford, who has made more than 20 films, including the recently released "The Electric Horseman," first became interested in conservation as an undergraduate at the University of Colorado, where he was an avid outdoorsman. Over the years, he has spoken out on a number of environmental issues, including the importance of solar power as an energy source. He has recently been working with Secretary of the Interior Cecil D. Andrus on the possibility of establishing an institute to train experts in natural resource management. The Interior Department is conducting an $80,000 feasibility study on Redford's idea.

Accepting the Wildlife Week chairmanship, Redford stressed the importance of balancing the needs of wildlife with the needs of people. More than 15 million students, teachers, and other conservation minded citizens are expected to participate in Wildlife Week activities this year. The National Wildlife Federation, the nation's largest nonprofit, conservation organization, will distribute 394,000 Education Kits, 65,000 Student Kits, and more than 1.3 million Wildlife Week posters to participants across the country and in Guam, Puerto Rico and the Virgin Islands.

Preserving habitat — the key to conserving wildlife — is the theme of a new color slide show produced by the National Wildlife Federation for showing to classrooms, conservation groups, and the general public. The presentation consists of three dozen color slides, a music-backed cassette recording, and a Teacher's Guide containing the printed script and background information concerning many of the topics covered in the show.

The show helps illustrate the meaning of this year's National Wildlife Week theme — "Save A Place For Wildlife" — by describing several common kinds of wildlife habitat and explaining what techniques are being used to provide and improve habitat, with special emphasis on attempts to rescue endangered species.

Unusual techniques explored in the show include: the burning of woods in Michigan to encourage the kind of vegetation the Kirtland's warbler requires; infecting trees with red-heart disease in an effort to provide more habitat for the red-cockaded woodpecker; with such techniques as "egg-napping" at whooping crane nests in Canada to start new captive and wild flocks; and luring the pearly-eyed thrasher away from its prey, the Puerto Rican parrot. The parrot, whooping crane, red-cockaded woodpecker, and Kirtland's warbler are all endangered species.

The show is available for $9.95 from the National Wildlife Federation, 1412 16th Street, N.W., Washington, D.C. 20036.

*Observing the habits of the trout you want to catch, such as the places they frequent, will increase your catch.*

I doubt that I ever met a trout fisherman who caught fish every time he went, although I have met several who said they did. But if you could question these trout experts on a strictly confidential basis, all would tell you that trout are wise old codgers, and that if you want to catch one, you will have to know more about him than he does about you.

Trout, like all natural creatures, do not "think" in the truest sense, but instead react to instinct. The animal's instincts serve one main purpose: they help him to survive. The trout fisherman who understands these instincts has an added advantage at streamside, and probably enjoys fishing more, once he realizes it is not all luck. The trout instincts of most interest to the fisherman may be called the "Eating and Avoiding Being Eaten" instincts.

Take the time some afternoon to stroll along a trout stream until you spot a feeding fish, then sit down and watch carefully. One of the first things you will notice is that these trout have favorite feeding areas. Often

by Jim Mize

# TROUT TACTICS

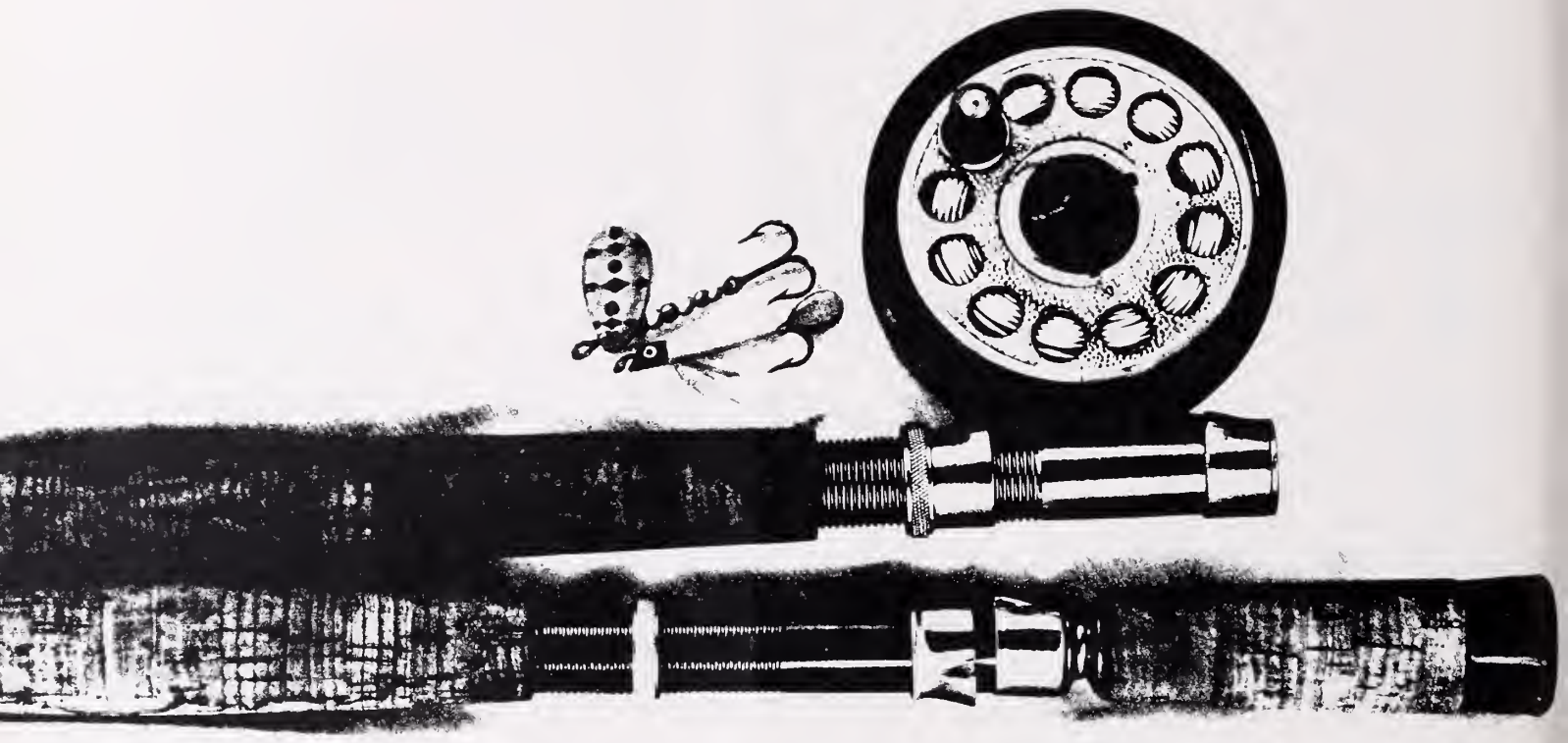
## Spending time learning to understand trout will show results later in your creel.

called feeding lanes, these areas are usually places in the current where food is channeled to a waiting fish. Depending on the type of food in the current, the trout will either lay just off the bottom, or hover just below the surface, waiting for these natural tidbits. Notice also the orientation of these fish. Trout in streams will face into the current, watching for food as it approaches. After they have moved and secured a bit of food from the current, trout will usually return to their original place of concealment, and continue to watch the feeding lane.

You may be disappointed watching these fish if you're trying to see what they are eating. When trout feed on aquatic insects, it may appear that they're not feeding at all. Occasionally, an underwater flash of their sides will give them away. When they feed on the surface, trout may only make a dimple on the surface and the insects may be too small to see. The rowdy splash of a feeding trout may indicate an effort to catch minnows or larger moving insects on the surface of the moving water.

In their efforts to avoid predators, trout have learned to react to shadows, reflections, vibrations, or sounds that indicate the presence of a larger animal. Whether a passing shadow indicates a swooping fish hawk or an appproaching fisherman, the result is the same; the trout hides and forgets his appetite. Shining net handles, rocks grinding beneath waders, or the splashing sound of someone wading will produce similar results. In short, trout are pretty unsociable, and you will receive a better welcome if they don't know you're coming.

In order to better avoid predators, trout usually hide in some type of cover, moving into the feeding lane to feed, and then moving back to cover. One good way to locate trout is to guess their place of hiding, and then spot the feeding lane closest to this cover. Typical areas of concealment include banks, uneven rocky bottoms (especially those that drop off sharply), overhanging branches, or even man-made cover such as pillars that support bridges.



Consideration of trout behavior will suggest several fishing rules and techniques for better fishing. First, you must stay hidden to be successful. Since trout look into the current, the best approach is from the downstream side. By casting ahead of the trout, allowing the bait to float back naturally,, you can usually remain well hidden.

The difficulty in remaining hidden increases if the stream is small, or if the water is especially clear, or shallow and slow-moving. In these cases it may be necessary to stoop, or try to remain silhouetted against the brush along the stream's edge. Dark clothes may help camouflage your approach. When stream flows are lowest as in dry summers, the noises of wading may scare practically all trout into places of concealment, making it necessary to slip along the edges and fish from the shadows. When streams rise and become murky, fewer precautions are necessary for an unobserved approach.

When it comes to baits, it seems that most anything will work one time or another. Some fishermen use nothing but natural baits and their imitations with much success, while others do just as well with cheese and marshmallows. A trout's tastes and preferences change from day to day, so the most important rule for consistent success is not what to use, but how to use it.

Size is often important in choosing a bait. When in doubt remember that it's easier to sell a snack then a seven course dinner; trout are usually less hesitant to take a small bait versus a mouthful. When the water is especially clear and shallow, small baits are much more effective. In these cases, half a nightcrawler may work better than a whole one, and one salmon egg may get more bites than two.

In presenting the bait, try to determine beforehand where the trout will be, then make your approach and present the bait. A free-drafting bait usually outperforms one that bogs down or is suspended in the current. Try to avoid using weights so heavy that the bait sticks to the bottom or disturbs the water excessively as it enters. The more your bait behaves like a natural food, the less a trout will hesitate before he takes it.

Too often, fishermen overlook the importance of the type line they use. When the line is too large for easy casting or for a natural drift, or if the water is clear and the line may be easily seen, a smaller line will produce better results. The need for lines over six pound test is rare, as long as the line is not badly frayed.

Remember as you pursue these wily creatures that the success of a trip is not measured in pounds, but in the pleasures of pursuit. I would like to add, however, that there is also much to be said for the pleasures of fried trout and hush puppies. A better understanding of trout, adds to both the pleasures of pursuit and the pleasures of the table.

# 1980 Trout Stocking Plan

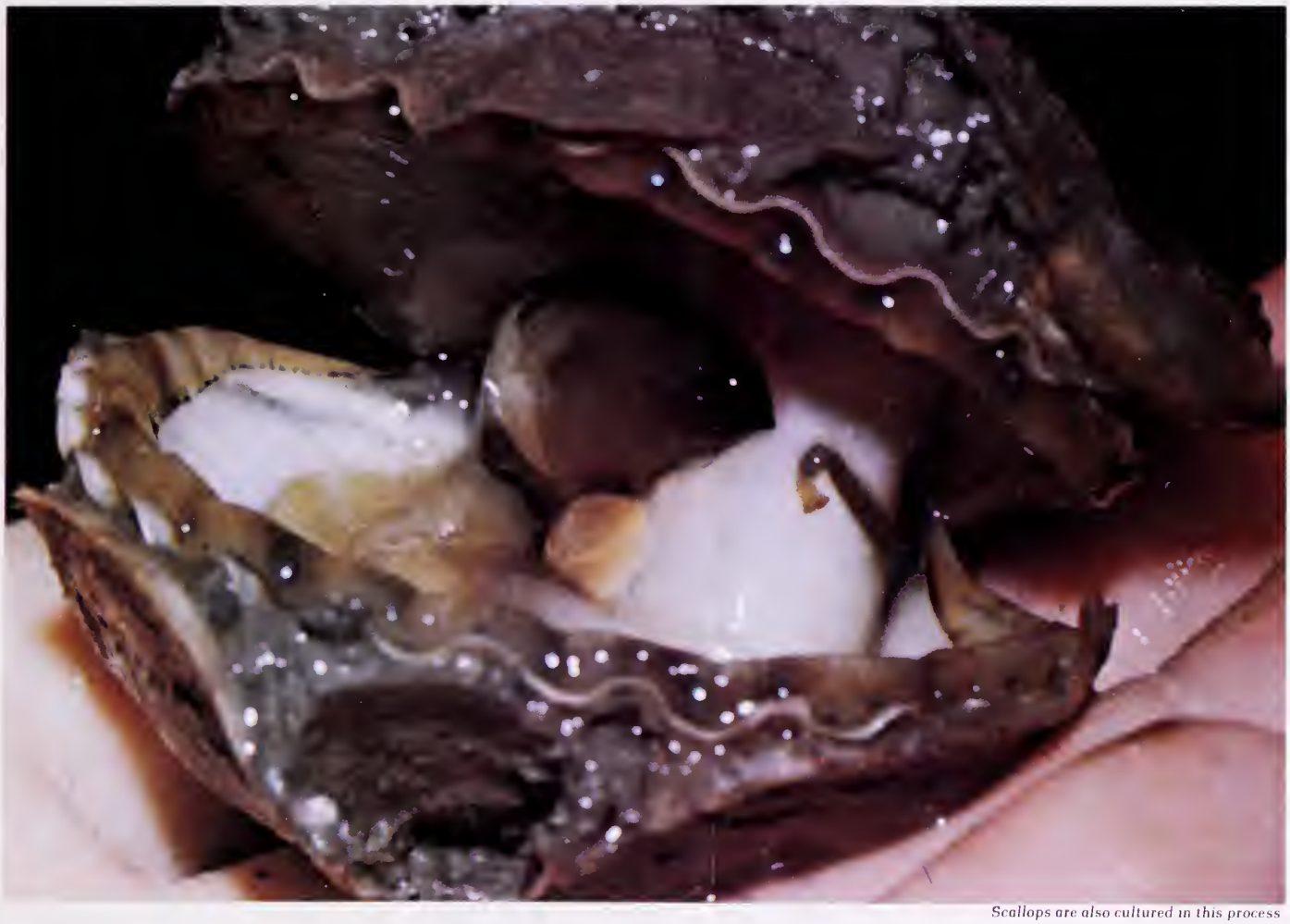
Here is the trout stocking summary for the program being carried out by the Virginia Game Commission and the U.S. Forest Service. In some cases, if a sufficient amount of one species is not available, another will be substituted.

LEGEND:
*—National Forest Waters
B—Brook Trout
R—Rainbow Trout
Br—Brown Trout

| | Preseason | April | May | June |
|---|---|---|---|---|
| ALBEMARLE COUNTY | | | | |
| Mormans River (N&S Forks) | R | | R | |
| City Water Works (Sugar Hollow) | B,R | | B,R | |
| ALLEGHANY COUNTY | | | | |
| Downey Branch | R | R | | |
| Smith Creek* | B | B | B | |
| Pounding Mill Run* | R | R | R | |
| Jerry's Run | R | R | | |
| Clifton Forge Reservoir* | R | R | R | |
| AMHERST COUNTY | | | | |
| Pedlar River (upper & lower) | B,R,Br | R | B,R | |
| Piney River (S.Fork & Prop) | B,R,Br | | Br,R | R |
| Brown Creek* | R | R | R | |
| Davis Mill Creek* | R | R | R | |
| Little Irish Creek* | R | R | | |
| AUGUSTA COUNTY | | | | |
| Back Creek Proper & S.Fork | B,R | | B,R | R |
| Jerkemtight Creek* | R | R | | |
| North River | R | R | R | |
| Buffalo Branch* (Falls Hollow) | R | | | |
| Ramsey's Draft* | R | R | R | |
| Braley Pond* | R | R | R | |
| Back Creek | R | | | |
| Mill Creek* | R | | | |
| Upper Sherando Lake* | R | R | R | |
| Lower Sherando Lake* | R | R | R | |
| Heartstone Lake* | R | R | R | |
| Elkhorn Lake* | R | R | R | |
| Rowland Pond* | R | R | | |
| Cold Spring Ponds* | R | R | | |
| BATH COUNTY | | | | |
| Bullpasture River | Br,R | | R,Br | R |
| Jackson River | R,Br | | B,R,Br | R |
| Spring Run | B,R,Br | | B,R | R |
| Back Creek* | R | R | R | |
| Wilson Creek | R | R | R | |
| Pads Creek | R | R | R | |
| Jackson River | R,B | R | R | |
| BEDFORD COUNTY | | | | |
| Hunting Creek* | R | | R | R |
| Battery Creek* | R | | R | |
| BLAND COUNTY | | | | |
| Hunting Camp Creek | B,R | | B,R | R |
| No Business Creek | B,R | | B,R | |
| Lick Creek | B,R | | B,R | R |
| Wolf Creek | R,Br | | R | R |
| Laurel Fork Creek | B,R | | R | |
| Lick Creek* | R | | R | R |
| BOTETOURT COUNTY | | | | |
| Jennings Creek | B,R | | R | R |
| Mill Creek | R,Br | | R | |
| Roaring Run | R,Br | | R | R |
| North Creek* | R | | R | R |
| Middle Creek* | R | | R | R |
| McFalls Creek* | R | | R | R |
| BUCHANAN COUNTY | | | | |
| Hurricane Fork | B,R | | B,R | |
| Dismal River | B,R | | B,R | R |
| CARROLL COUNTY | | | | |
| Little Reed Island Creek | R,Br | | R,Br | R |
| Stewart's Creek | B,R | | B,R | |
| Big Reed Island Creek | B,R | | B,R | R |
| Crooked Creek | B,R | | R | R |
| Burkes Fork | B,R | | B,R | R |
| Lovills Creek | B,R | | R | |
| Laurel Creek | R,Br | | Br | R |
| Snake Creek (Fish for Fun) | | | Br | |
| CRAIG COUNTY | | | | |
| Potts Creek | R,Br | | R,Br | R |
| Barbours Creek* | R | | R | R |
| Cove Creek* | B | | R | |
| Lipes Creek* | B | | | |
| Potts Creek* | B,R,Br | | B,R,Br | R,Br |
| Schoolhouse Branch* | R | | R | |
| North Fork Barbours Creek* | R | | R | |
| S. Fork Barbours Creek* | R | | R | |
| DICKENSON COUNTY | | | | |
| Frying Pan Creek | B,R | | B,R | |
| Russell Fork River | R,Br | | R,Br | R |
| Pound River | R,Br | | R,Br | R |
| FLOYD COUNTY | | | | |
| Burkes Fork | B,R | | B,R | R |
| Howell Creek | B,R | | B,R | R |
| Rush Fork | B,R | | | |
| W. Fork Little River | B,R | | R,Br | R |
| Meadow Creek | B,R | | | |
| Laurel Fork | B,R | | | |
| Mira Fork | B,R | | | |
| Goose Creek | R | | R | |
| Little River | R,Br | | R,Br | R |
| Little River (Fish for Fun) | | | Br | |
| FRANKLIN COUNTY | | | | |
| Maggodee Creek | B,R | | B,R | |
| Green Creek | B,R | | R | R |
| Runnet Bag Creek | B,R | | B,R | |
| FREDERICK COUNTY | | | | |
| Back Creek (Upper) | B,R | | B,R | |
| Back Creek (Lower) | B,R | | B,R | |
| Hogue Creek | B,R,Br | | B,R,Br | |
| Cedar Creek | B,R,Br | | B,R,Br | R |
| Paddy Run | B,R | | B,R | |
| GILES COUNTY | | | | |
| Big Stoney Creek | B,R,Br | | B,R | R |
| Sinking Creek | B,R,Br | | R | R |
| Dismal Creek* | R | | R | R |
| GRAYSON COUNTY | | | | |
| Big Wilson Creek | B,R,Br | | R,Br | R |
| Middle Fox Creek | B,R | | B,R | R |
| Middle Fork Helton Creek | B | | B | R |
| Big Fox - Upper | B,R | | B,R | R |
| Big Fox - Lower | B,R,Br | | | |
| Elk Creek | B,R | | B,R | R |
| Peach Bottom Creek | R | | R | R |
| Helton Creek | R | | R | R |
| Turkey Knob Fork Creek | B,R | | B,R | |

| | Preseason | April | May | June |
|---|---|---|---|---|
| Hale Lake* | R | R | R | R |
| GREENE COUNTY | | | | |
| Lynch River | B,R | | B,R | |
| South River | B,R | | B,R | R |
| Swift Run | R,Br | | B,R,Br | R |
| HENRY COUNTY | | | | |
| Smith River (Philpott) | B,R,Br | | R,Br | R |
| Smith River (Bassett) | R | | R | |
| Smith River (Koehier) | R | | R | |
| HIGHLAND COUNTY | | | | |
| Bullpasture River | B,R,Br | | B,R | R |
| South Fork Potomac River | B,R,Br | | R | |
| Jackson River | B,R,Br | | B,R | R |
| Back Creek | B,R | | B,R | R |
| LEE COUNTY | | | | |
| Hardy's Creek | R,Br | | R,Br | R |
| Martins Creek | B,R,Br | | R,Br | R |
| N. Fork Powell River | B,R | | R, | R |
| MADISON COUNTY | | | | |
| Garth Run | B,R | | B,R | R |
| Hughes River | B,R,Br | | R,Br | R |
| Robinson River | R,Br | | R,Br | |
| Rose River | B,R,Br | | B,R,Br | |
| MONTGOMERY COUNTY | | | | |
| Tom's Creek | B,R | | B,R | |
| Poverty Creek* | R | | R | |
| Craig Creek* | R | | R | |
| NELSON COUNTY | | | | |
| Tye River | B,R,Br | | R,Br | R |
| N. Fork Tye River | B,R | | B,R | R |
| South Rockfish River | B,R | | B,R | |
| Stoney Creek | B,R | | B,R | R |
| PAGE COUNTY | | | | |
| Cub Run* | R | R | R | |
| Upper Passage Creek* | R | R | R | |
| PATRICK COUNTY | | | | |
| Dan River (below Powerhouse) | B,R,Br | | R,Br | R |
| Dan River (above Powerhouse) | B,R | | R,Br | |
| Rock Castle Creek | B,R | | B,R | |
| Round Meadow Creek | B,R | | B,R | |
| N. Fork Mayo River | B,R | | B,R | |
| S. Fork Mayo River | B,R | | B,R | |
| Poorhouse Creek | B,R | | | |
| Big Ivy Creek | B,R | | B,R | |
| Ararat River | B,R,Br | | B,R,Br | R |
| PULASKI COUNTY | | | | |
| W. Fork Peak Creek | B,R | | R | |
| RAPPAHANNOCK | | | | |
| Piney Branch | B,R | | B,R | |
| ROANOKE COUNTY | | | | |
| Roanoke River | B,R,Br | | B,R,Br | |
| Tinker Creek | B,R | | B,R | |
| Glade Creek | B,R | | R | |
| ROCKBRIDGE COUNTY | | | | |
| Mill Creek | B,R,Br | | R | R |
| Irish Creek | B,R | | B,R | R |
| South River | B,R | | B,R | |
| ROCKINGHAM COUNTY | | | | |
| N. Fork Shenandoah River | B,R,Br | | B,R,Br | R |
| Dry River | B,R | | B,R | |
| Briery Branch | B,R | | B,R | |
| Silver Lake | R,Br | | | |
| Boones Run* | R | | R | |
| Shoemaker River* | R | R | R | |
| Blacks Run* | R | R | R | |
| Gum Run* | R | | R | |
| Skidmore Fork* | R | | R | |
| Slate Lick Run* | R | R | R | |

| | Preseason | April | May | June |
|---|---|---|---|---|
| Briery Lake* | R | R | R | |
| Hone Quarry Lake* | R,Br | R | R | |
| Hone Quarry Run* | R | R | | |
| RUSSELL COUNTY | | | | |
| Copper Creek | R | | R | R |
| Thompson Creek | B,R | | R | R |
| SCOTT COUNTY | | | | |
| Little Stony Creek - lower | R,Br | | R | R |
| Stock Creek* - lower | R | | R | |
| Stock Creek - upper | R | | | |
| Devils Fork* | R | | R | |
| Straight Fork* | R | | R | R |
| Little Stoney Creek - upper* | R | | R | R |
| Cove Creek* | R | | R | R |
| SHENANDOAH COUNTY | | | | |
| Passage Creek | B,R,Br | | B,R,Br | R |
| Big Stoney Creek | B,R,Br | | R,Br | R |
| Cedar Creek | B,R | | B,R | R |
| Mill Creek | B,R | | B,R | R |
| Little Stoney Creek* | R | R | R | |
| (Above Woodstock Res.) | | | | |
| Paddy Run* | R | R | R | |
| Cedar Creek* | R | R | | |
| Peters Mill Creek* | R | R | R | |
| Tomahawk Pond* | R | R | R | |
| Little Passage Creek* | R | R | R | |
| SMYTH COUNTY | | | | |
| S. Fork Holston River (Gorge) | B,R,Br | | R,Br | R |
| S. Fork Holston River (lower) | B,R,Br | | B,R,Br | R |
| Big Laurel Creek | B,R | | B,R | R |
| Staley's Creek | B,R | | B,R | R |
| Middle Fork Holston River | R,Br | | R,Br | R |
| Comers Creek* | R | | R | R |
| Hurricane Creek* | R | | R | R |
| Houndshell Creek* | R | | R | |
| Dickey's Creek* | R | | R | |
| Middle Creek | R | | | |
| Roland Creek* | | | R | |
| TAZEWELL COUNTY | | | | |
| Wolf Creek | R,Br | | R,Br | |
| Cove Creek | B,R | | B,R | R |
| Laurel Creek | B,R | | B,R | |
| Roaring Fork | B,R | | B,R | R |
| Little Tumbling Creek | B,R | | B,R | R |
| WARREN COUNTY | | | | |
| Gooney Run | B,R,Br | | B,R,Br | |
| WASHINGTON COUNTY | | | | |
| Whitetop Laurel | B,R,Br | | R,Br | R |
| Tennessee Laurel | B,R | | B,R | R |
| Green Cove Creek | B,R | | B,R | R |
| Big Brumley Creek | B,R | | B,R | R |
| Big Tumbling Creek | B,R | | B,R | R |
| Valley Creek | B,R | | B,R | R |
| Straight Branch* | R | | R | R |
| WISE COUNTY | | | | |
| Middle Fork Powell River | B,R | | B,R | R |
| Mountain Fork* | R | | R | |
| Burns Creek* | R | | R | |
| Clear Creek* | R | | R | |
| Machine Creek* | R | | | |
| High Knob Lake* | R | | R | R |
| WYTHE COUNTY | | | | |
| E. Fork Stoney Creek | R | | R | |
| Gullion Fork Creek* | R | | R | |
| E. Fork Dry Run* | R | | R | |
| W. Fork Dry Run* | R | | R | |
| W. Fork Reed Creek* | R | | R | |
| Gullion Fork Pond* | R | | R | R |



*Scallops are also cultured in this process*

# Saltmarsh Ecology Part V: Aquaculture

by Curtis Badger

**The future of the world may well depend on the harvest of food from the sea.**

The arithmetic is frighteningly simple. The population of planet earth is climbing. The land available to grow food is disappearing. And someday in the not too distant future these two factors will clash in a negative equation that is going to leave a lot of people hungry.

It doesn't take a gift of prophecy to realize that the world supply of food and the world supply of people are moving in separate directions. And those who minimize the problem are likely the same myopic ones who scoffed ten years ago at the idea of an oil shortage.

The world food supply is dependent upon the land, and the land is disappearing. Productive farms have been drawn and quartered, covered with asphalt, and turned into commercial, residential, and recreational developments. Man's great hope to feed the masses in the future will be the sea, plus whatever farmland we manage to bequeath to the next generation.

The concept of sea farming — aquaculture — is not new. Egyptian paintings depict the harvesting of fish from ponds about 2,000 B.C., and ancient Japanese drawings show methods of oyster culture in island coves where oysters and their pearls are grown today.

The United States, blessed with an abundance of fertile cropland, has had little need to develop a strong aquacultural industry. Although experiments with trout management began in this country as early as the Civil War period, most efforts at fish culture were directed toward species popular with recreational anglers. It was not until about ten years ago that real efforts were made to grow fish and shellfish under controlled conditions for use as human food.

In the past decade the federal government has pumped millions of dollars into aquacultural projects and research. NOAA has budgeted about $8 million this year for maricultural projects and another $10 million for Sea Grant work. Federal money and capital investments from private industries have funded numerous research projects. One of the more creative is in Massachusetts where waste treatment and shellfish culture have been combined. Treated effluent from Otis Air Force Base is the source of pond water for aquacultural experiments at Woods Hole Oceanographic Institution. Algae grown in the water provide a food source for oysters and clams, which are planted in the ponds and harvested at maturity. Although ancient in concept, aquaculture is a new frontier in this country. Americans are not exactly enthusiastic fish eaters. We eat about 13 pounds

of fish per person per year, mostly in the form of fish sticks and short order convenience foods. This compares with 70 pounds per person in Japan.

These figures are likely to change in the next decade or two. Fish and shellfish will gain in importance as a protein source, cultivation of marine resources will move from the experimental to the production stage, and Virginia will be one of the leaders in aquacultural technology.

Virginia is already a pioneer in shellfish culture, and innovations developed by the Virginia Institute of Marine Science are rapidly spreading among the nationwide network of shellfish producers.

VIMS' efforts at culturing clams is an excellent example of how aquaculture works — how technology can be used to enhance a naturally productive biological system.

VIMS began work with clams in 1969 at its Wachapreague lab on the Eastern Shore, hoping to give watermen an alternate industry to fall back on after a mysterious disease organism, MSX, triggered a catastrophic decline in the oyster industry in the early 1960s.

Heading the project was Mike Castagna, a VIMS scientist and diver who has become a nationally known expert on culturing clams.

The procedure is relatively simple. Scientists stimulate laboratory clams to spawn by controlling the temperature of the water in which they are kept. The young larvae are raised in the lab, away from predators and pollution sources, until they are large enough (4 to 6mm) to burrow beneath the bottom. The seed clams are then moved to a natural seawater environment and placed on a bed of crushed stone about two inches thick. The stone offers the young clams protection from crabs and small fish. More protection is provided by tents made of plastic mesh woven to a metal frame.

*These laboratory seed clams are ready for planting.*

At first the process yielded little more than frustration. "In that first year I probably planted more clams and harvested less than anyone in the industry," says Castagna. "In one planting we put out more than seven million clams, and in two weeks we lost every one of them. All told, we lost close to 40 million clams that first year."

Castagna and his crew of six were sailing in relatively uncharted waters; they had to learn by their own mistakes. Eventually the bugs were worked out and they were getting a survival rate of 86 to 92 percent.

The system is now reliable and Castagna offers a clam culture course each June to persons interested in growing clams commercially. Although Virginia has thousands of acres of rich tidal wetlands suitable for clam culture, most of the students in the course are from Massachusetts, New York, and New Jersey. "We've probably trained a dozen or so people from New Jersey alone, and I know of two sets of partners from there who are making a profit on the technique they learned here," says Castagna.

To students in the clam course, Mike Castagna has done for the clam industry what Jacques Cousteau has done for world understanding of the oceans. Said one student at the session last June: "Mike Castagna's name is a household word among clammers from Florida to California. His method — using gravel beds and placing tents over the clams — is simple but it works amazingly well. No one ever thought of it before."

Castagna is convinced the method is commercially viable, and now he is fine tuning the system and investigating ways of speeding up clam growth. "Where it normally takes a hard clam three years to reach the little nick size, we can get the same result in 22 to 24 months. By selecting parent clams that grow fast, we can speed up the growth rate by about 30 percent."

It could be that the clam chowder you eat ten years from now will be made from clams spawned in a laboratory and raised to adulthood under a plastic mesh tent. Compared with other aquacultural technologies, clam culture requires less capital outlay, and after the seeds are planted, maintenance is minimal. Mostly it's a matter of making sure the plantings aren't vandalized and that the tents stay securely tied down.

Between the 16th and 18th months the tents are removed and the largest clams are harvested. These are the fast growers and are usually kept as spawning stock. Between the 22nd and 24th months all the clams are harvested. At this point they are about 80 percent New York nicks and 20 percent Philadelphia nicks (somewhat smaller).

While the VIMS project is experimental, some clams have been sold to test markets. "We wanted to see if they would be acceptable if it were known that they were cultured clams. We not only saw them accepted but were offered $10 per 1000 higher than market price because of the uniformity of size."

Nicks were selling on the Eastern Shore last summer for about ten cents each.

The future of aquaculture lies in the productive saltmarshes that separate the ocean and high land. The marshes are easily accessible and are an estimated ten times as productive as coastal waters. The harvest of marine resources depends upon the survival of clean expanses of wetlands. While plastic tents can protect young clams from predators, there is little that can be done about industrial waste, pesticide runoff, and other pollutants.

While farming has benefitted from modern planting techniques, chemical fertilizers and pesticides, and hybridization, food harvested from the sea has grown with practically no manipulation by man. Indeed, our seafood harvest has come despite the effects of man, rather than because of them.

Scientists have begun experiments to determine the yield of estuaries which could be cultivated for aquacultural use. In *Life and Death of the Saltmarsh*, John and Mildred Teal report that experiments at Bears Bluff Laboratory in South Carolina have shown that marsh ponds can produce 250 to 400 pounds of fish per acre per year, 100 pounds of crabs, and from 300 to 400 pounds of shrimp. The only cultivation used was predator control. Scientists believe significantly higher yields could be realized with intensive culture.

*Mike Castagna heads up the program sponsored by VIMS.*

Technology has vastly increased the yield of farmland, even though there are fewer farms today than a generation ago Technology could do the same for American wetlands, but like the farm that has been covered with asphalt and turned into a parking lot, a saltmarsh that has been drained and filled or polluted with toxic runoff will produce nothing. And all the efforts of science will not change that.

*Size and growth can be measured by shifting larvae in a container with a screen of a known size.*

# My First Turkey

*by Juanita Colvin*

***The first flush of turkey fever is an unforgettable feeling.***

The early morning air was crisp and biting as I sat under a huge oak tree, halfway up a rugged mountain which my husband and I lovingly referred to as "Heart Attack Hill." It was the third day of deer season and I was rooted to the spot, patiently waiting for my deer to make an appearance.

Whitetail hunting has always been my favorite sport, and each year at the close of the season, I automatically start the "wait till next year!" countdown.

Hunting small game was o.k. — and I really enjoyed it. So was varmint hunting, my second love. But this year, deer season was to bring varmint hunting down a notch to third place and replace it with something much more exciting — hunting the magnificent wild turkey.

Before that day, to me a turkey was something you saw on the table at Thanksgiving (usually the product of my husband's turkey hunting efforts). It was stripped, stuffed, and had the appearance of an overgrown roasting hen. It was considered by me to be a fowl in the same category with the barnyard hen, rather dumb and uninteresting. I just couldn't understand why everyone else got so worked up.

Oh, I had listened to my husband and the other guys talk about turkey hunting, and I certainly wouldn't pass one up if he happened by; but to get up, walk up a mountain, and sit for hours day after day looking for one — that was something else again.

Boy! Did I have that bird pegged wrong!

Anyone who knows anything at all about a turkey knows that he is much smarter than the average hunter. Often he's smarter than the *best* turkey hunter. You really have to put forth your best efforts — and then some — to outwit this bird.

Over the years, calls made from everything imaginable have been constructed to lure the turkey into carelessness. Camouflage suits, netting, face masks, gloves and camouflage tape for gun barrels are only bare necessities for the serious turkey hunter. The most important ingredients for hunting turkeys come from within the hunter himself. He must have unlimited patience, must be able to sit quietly for hours on end; daring not to move the slightest to scratch, swat an insect, or move an uncomfortable limb or acorn. As sure as he does, that turkey's out there watching, and will silently slip away with the hunter none the wiser.

My first turkey appeared out of nowhere, slowly ambling along and feeding all by himself. At first, when I had caught a glimpse of movement about 100 yards away, I couldn't figure out what it was. But as soon as it moved a little closer there was no doubt: *turkey*.

And there I sat — perfectly dressed for deer season. My beautiful reds and flourescent orange would have been the envy of the most brilliantly colored rose!

Fortunately for me, the oak was thick and hid me quite well. And there had been no shots on the mountain that morning to scare the turkey. Although moving cautiously, he was not unduly alarmed. I didn't have a call with me (didn't know how to use one then) and my hunting equipment consisted of a bolt action .270 with open sights.

I waited until he was about fifty yards from me to shoot, figuring that if he hadn't heard my heart throbbing like a jackhammer by then, I could get an easy shot at him. He was moving slowly up the mountain, stopping occasionally to violently scratch in the leaves, giving me a perfect broadside shot.

As the .270 roared, I stared in disbelief as the turkey went down, thrashed around momentarily, turned, set his wings and sailed off the mountain!

Then I remembered what my husband had said about a wounded turkey: "If he sets his wings and flies, and you know he's been hit, watch him carefully and see where he lands. A wounded turkey can fly a long way, even with a fatal hit. When you see him land, pick a tree or other landmark as a reference point; fix it firmly in your mind, and immediately take a straight line to him. Possibly you can find him, if he doesn't sail completely out of sight."

I watched as he slowly sailed down the mountain, across a low place, and disappeared in the trees on a hill beyond. I tried to memorize the open place in the trees where he had gone in.

Gathering all my belongings, I began walking hurridly toward the trees where he had disappeared. It seemed forever. I kept thinking, "He's probably in the next county by now!"

About 400 breathless yards or so later, and at the very foot of the mountain, I saw a movement — and there was my gobbler scrambling toward some brush. I shot again, and this time he lay still.

Close examination showed my first shot had been low, breaking one thigh and damaging part of the breast. If I had not followed him he would no doubt have crawled off in the brush to either die of his wounds or at the mercy of a predator.

I certainly was glad I had paid enough attention to my husband to remember how to follow a wounded turkey. No hunter intentionally wounds any animal or game bird, but in case this does happen, every serious hunter should know how to follow up his game. Fortunately for me, I had had a very good teacher.

Well! This was such an unexpected stroke of luck, and I was so excited, that I carried my young gobbler (he later weighed 12½ pounds and sported a short goatee) all the way up the mountain to my husband's deer stand, just to show him my good fortune!

It has been several years and several turkeys since that first "experience." Since that time, I have learned quite a lot about turkeys. I've learned that fooling an old gobbler in the spring isn't quite as easy as "lucking" a young gobbler in the fall.

Very few thrills in hunting can match calling a turkey in to your rifle, and I've since then learned to use a diaphragm mouth call for this. Also, my rifle for hunting turkeys now is a 6mm, sporting a reduced load behind a 100 grain bullet. This gives me plenty of killing power, yet does a minimal amount of damage to the meat.

Once you have killed your first wild turkey, you'll find as I did what everyone else was "all worked up" over; and believe me — this affliction known as "turkey fever" has absolutely no cure!

# Rabies in Pet Skunks

## This disease is almost undetectable in skunks ... until it's too late.

by Barry L. Siler

Reprinted From May, 1979 *Missouri Conservationist*

A young pet skunk exposed 29 persons to rabies in Oklahoma in June, 1978. A month later, 26 persons were exposed to a rabid pet skunk in Indiana. In August, a rabid skunk kitten in Arizona exposed 23 persons to the disease. Within three months rabies became a very real threat to 78 people; all of them had to undergo antirabies treatment.

In each of these three cases, those exposed had not come into contact with wild animals — all of the rabid skunks were pets.

"The risk of rabies in pet skunks should never be ignored," says Dr. Donald Blenden, Professor of Veterinary Medicine at the University of Missouri, Columbia and a nationally recognized expert on the disease.

"Most people who acquire skunks for pets don't know what they are getting into. Indeed, many pet skunks are acquired on impulse, and once most people have a pet like that in the house, they don't know enough about it to give it proper care."

Finding a skunk for a pet is relatively easy. Some are trapped in the wild. Others are bought in pet shops located in those states or cities which permit sale of skunks. In addition, a number of outdoor-oriented magazines often carry small advertisements for mail order purchase of wild animal pets. In Virginia no permit is required and they can be purchased at many pet stores.

Some of the skunks available through the mail or even in pet stores come from questionable backgrounds. The rabid pet found in Arizona is an example.

A supplier of wild animal pets in Texas sent this skunk kitten in a shipment of fifty skunks to a pet wholesaler in Phoenix, Arizona. At about the same time, that supplier also sent shipments of skunks to Houston, Texas, and to south Missouri. Within days, the Arizona wholesaler distributed all fifty skunks to area pet shops.

The rabid skunk kitten, which was not showing any signs of the disease at the time, was then sold to a family who subsequently returned it to the pet shop because it had bitten them. This particular skunk was next sold to another family.

Within a month after leaving Texas, the skunk kitten began to salivate excessively, scream and bite viciously at its cage. Three days later it died and was turned over to the state health laboratory which found the animal to be rabies positive.

When tracking down the source of the animal, the Texas Department of Health discovered that the supplier did not have adequate facilities to breed and raise enough skunks to meet demand. So the supplier often resorted to trapping young wild skunks or pregnant females and selling their offspring. The year before this incident occurred, the dealer had distributed approximately 500 skunks to Arizona, Michigan, Illinois, Texas and Missouri.

The area in Texas from which these animals were shipped has had a problem with skunk rabies for years.

Bringing any skunk into captivity will alter its behavior. This change may mask some early signs of rabies. As youngsters, most pet skunks become docile and receptive to human attention. However, as they grow older, many develop the tendency to bite.

"Skunks are fairly easy to domesticate," says Dr. Blenden. "Generally, they can establish good rapport with people. On the other hand, regardless of how 'good' any pet skunk is, it may bite. In a bite incident, the behavior of a wild skunk can provide direct clues to its health. The pet skunk does not behave normally because it is semi-domesticated, and this health clue is lost when a bite occurs."

The usual route of transmission of the rabies virus from a skunk to a human is through a bite or from the animal's saliva invading a skin wound on someone handling the animal. This sort of disease transmission is much more likely from a pet skunk than from a wild one because of the increased human contact with a pet.

The course of rabies in skunks is not the same as the progress of this disease in dogs and cats. "No one is sure of the exact incubation period of the natural disease in skunks," Dr. Blenden says. "A skunk may shed the virus through its saliva long before any signs of illness appear. In the dog, signs of rabies will usually become obvious within four days after the animal begins to shed the virus. That's why a quarantine period for suspected dogs can be effective in detecting rabies. A quarantine period for skunks simply does not work."

Therefore, whenever any skunk is suspected of having rabies, or has bitten someone, the skunk must be destroyed. Local health officials must be contacted immediately. The intact head of the suspect animal is then sent by officials to a diagnostic laboratory. There, technicians make an extract of the animal's brain. For analysis, the most commonly-used test is the Fluorescent Antibody test in which a portion of the extract is specially treated and then examined under the microscope. The veterinarian or health official looks for certain cell features that were part of the body's reaction to infection.

*Photo by Leon Kesteloo*

Veterinarians can easily and inexpensively immunize dogs and cats against rabies. However, Dr. Blenden states: "Vaccination of skunks against rabies is a totally untested procedure. We do not know whether any vaccine produces immunity, whether the natural onset and clinical course of rabies may be masked or modified by vaccination, or whether a live-virus vaccine can actually produce rabies in the skunk — in fact, this is quite possible."

Although rabies is not a common disease in the United States, most of the reported cases of rabies in the Midwest have have been in wild skunks. In 1978, an estimated 70 skunks in Missouri were found to be rabies positive.

Rabies does not appear to be transmitted through the wild skunk's principal means of defense — that pungent spray. In a recent study, the musk glands of 51 rabid skunks were examined, and none showed any signs of the presence of rabies virus.

"Skunks are a natural part of our wildlife heritage. As such, they should be left in the wild to be enjoyed there," Dr. Blenden concludes. "The risk of rabies is always present with any skunk, but the potential for exposing more people to the disease becomes much greater when a skunk is made into a pet."

# Though hardly appealing, vultures don't deserve their ghoulish reputation.

Vulture. The very word doesn't bring up many pleasant thoughts. But when you consider the benefits to man of this bird, it seems that vultures have an undeservedly bad reputation. Virginia has two native vultures, the turkey vulture *(Cathartes aura)* and the black vulture *(Coragyps atratus)*.

Vultures have always had a rather unpleasant relationship with man, probably beginning in America, when the early settlers of the south mistakenly killed the turkey vulture believing it to be a turkey, only realizing their mistake after getting deathly sick. Despite these earlier encounters with vultures, it has become increasingly clear that these birds hold a unique place in the ecology of nature as carrion-eaters.

Lacking strong talons, and, therefore, practically powerless to cause death to any animal, they seek what fate provides. Often hunting in groups, these birds scout cattle pastures, dumps, sewage outlets, river banks, roadways and other potential feeding grounds for carrion. By consuming old putrified meat which other animals fail to eat, they aid in the general breakdown of dead bodies. In some parts of the world, villages have no other sanitation department other than vultures. They will overhaul a rubbish heap for bits of garbage that no goat would even touch. Many farmers even depend on the services of these birds to rid their fields and ranches of dead livestock.

The vulture's habit of eating dead flesh probably seems disgusting and filthy to many individuals. However, this is truly a misunderstanding, for vultures are actually some of the cleanest birds in nature. They bathe often in streams and rivers and after eating they may even wipe their heads clean on grass or sand. Their bald heads and necks help minimize soiling while they feed. And cleaning up afterwards is made easier since bare skin is much simpler to clean than a mat of feathers.

These birds are so well-adapted to their way of life, they will even consume animals which have died from disease. Some farmers have the false notion that vultures will transmit disease from carrion elsewhere; but, the extremely strong digestive system of these birds puts an end to any germs which are consumed. Their stomach juices act as a strong antiseptic, so by regurgitating and excreting their waste on their legs and feet, they kill any germs which might have been picked up while feeding. Even their bald head prevents transporting of germs due to its constant exposure to sunlight.

It has been found that bacteria of some of the most feared animal diseases may be destroyed by passing through the digestive systems of vultures. And by consuming diseased carcasses, these birds help prevent the spread of sickness by insects such as flies which are constantly attracted to dead flesh.

Surely these magnificent birds are deserving of a better reputation. So, the next time you see one of these graceful birds soaring with its full six-foot wing span, view him with appreciation.

by Robert Lochmiller

# VULTURE

*Their bald heads and necks actually help minimize soiling while they feed.*

# NO BONES ABOUT SMALL FISH

**Try this easy way to fillet small fish.**

**by Harold Skinner**

I hate bones! Now I suppose I've been spoiled, since I haven't eaten any fish in the last four years except those that were served boneless and skinless. But why put up with mouth ful after mouthful of bone-studded fish, when you can enjoy the carefree delicacy of fillets with just a bit more effort at the cleaning board?

What about all the waste, you ask? You say that the small panfish you usually catch are just too tiny to fillet? I used to offer those same excuses to justify the bone-picking

*1. Begin by placing the fish on its side on your cutting board. Make the usual cut behind the pectoral fin just deep enough to reach the backbone but no farther. This cut should extend from the base of the fish's head down to its forward belly.*

*5. Slice the thin bit of flesh that still remains along the belly of the fish, and the fillet is suddenly free!*

bouts that accompanied almost every fish dinner. That is, until I nearly choked on a bluegill bone one evening. That was when I declared war on bones!

I reasoned that there *must* be a practical way to fillet small fish without wasting a single delectable morsel. So the next time I caught a mess of bluegills I did some experimenting. My first realization was that one must have a very sharp knife — and I mean razor sharp — to do the job efficiently. Filleting with anything less than ultra-sharp cutlery is like splitting wood with a shovel — it might work, but it's not an ideal arrangement.

Next I concluded that the usual method used to fillet larger gamefish, making a shallow cut behind the pectoral fin and sawing along the spinal column towards the tail, was wasteful. Through trial and error (much error!) I found the following method to be the most effective.

The meat should be quickly rinsed just after filleting and patted dry. For delicious fried fish try this simple, but hard to improve recipe. Roll the fillets in seasoned flour and dip into an egg that has been beaten with a dash of milk. Next roll the tidbits in toasted bread crumbs, and pop them into a skillet of hot oil. Fry to a rich, golden-brown, turning only once. Avoid overcooking, especially with small, thin fillets, since this will dry them out. After a fine meal of fried fillets, steaming, home-grown vegetables, and a tall glass of iced tea, I bet you'll not pick another bone!

*2. Now make a shallow incision from the top of the first cut, parallel to, and flush with the dorsal fin to the base of the tail. The closer you cut to the dorsal fin, the less meat you waste.*

*6. The skin of some fish contributes a "muddy" flavor to the meat. To remove the skin, lay the boneless fillet skin-down on your cutting board. Pin the tip of the tail-end to the board with an ordinary fork, and cut into the meat at that point just down to the skin.*

*3. Deepen your last cut carefully along the bones down towards the belly. Follow the bones closely with your knife blade so that no flesh is left clinging to them.*

*7. With the blade tilted at about a ten-degree angle to the board, gently saw the fillet from the skin.*

*4. When the rib cage is reached, pare the remaining meat from the ribs. Exercise caution here, for sloppy work will leave ribs in the fillet.*

*8. You'll be surprised at how easily the skin is removed. So there you have it — a boneless, skinless fillet.*

*Turn the fish over now and repeat the steps for that side. After some practice you'll probably be able to fillet the average small panfish in less than two minutes.*

marine life

geology

forests

wildlife

soil & water

# Where Students Meet Nature Face To Face

# Get Into Your Environment

## The Conservation Short Course is a great place for teachers to really get to know the natural world around them.

Sound natural resource education takes on ever-increasing importance as our citizens must make complex resource and environmental management decisions. The best place to reach the decision-makers of tomorrow is in the classroom today!

The Virginia Resource-Use Education Council, a privately-funded organization of conservation professionals, has designed this course to help teachers do a better job of presenting sound environmental concepts in the classroom.

During the three week course, students learn the basics of geology, soil and water, marine life, forestry and wildlife. Topics range from the complex ecological forces at work along our coast, on to a study of the resources of the forest and a look at the economic and aesthetic value of our wildlife heritage.

Thirty scholarships are offered at each of the four schools covering all tuition and fees, supplies and materials. A generous allowance toward board and room is provided for those who stay on campus. Applications will be accepted until all scholarships are filled. Scholarship recipients will be notified by return mail. Alternate courses will be suggested if the one applied for is filled.

Five quarter hours credit will be given at V.P.I. Three semester hours credit will be given for completion at Virginia State College, William and Mary and Longwood College. Credits may be used toward endorsement in Earth Science or Biology and the course can be used for certificate renewal credit. Qualified students may apply for graduate credits.

Though the course is aimed at teachers, supervisors and administrators, anyone interested in knowing more about the environment is encouraged to attend.

☐ I would like to order *Virginia's Resources*, a text published by the Council. Send $3.50 per copy to: Virginia Environmental Education Publications, Inc., 800 Oriole Drive, Virginia Beach, Virginia 23451.

**ACT NOW**—Those submitting applications early stand the best chance of getting scholarships at the institution of their choice. Be sure to indicate your choice of college on the form.

Mail to:
Virginia Resource-Use Education Council
c/o Bernard L. Parsons
Seitz Hall Room 203
Virginia Polytechnic Institute & State University
Blacksburg, VA 24061

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ENVIRONMENTAL EDUCATION COURSE:

☐ VPI&SU June 17—July 3, 1980

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☐ VA State University July 7—July 25, 1980

☐ Longwood College June 16—July 3, 1980

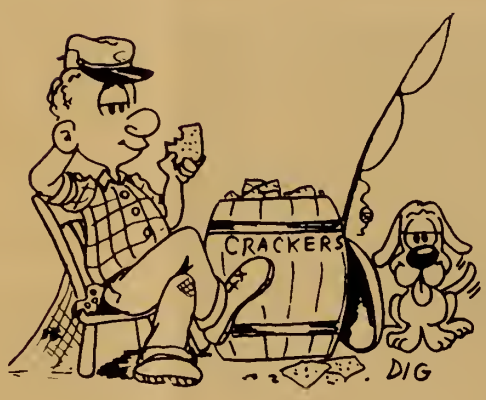
# It Appears to Me

## by Curly

**. . .A PERSON OUGHT TO HAVE ONE**

"Trapping and Conservation" is the title of a new publication which was produced recently by the National Wildlife Federation. The booklet attempts to look at the part trapping and trappers play in modern wildlife management. Pulling no punches, this ten-pager discusses both sides of trapping, but concludes that trapping is an effective and valid method of preventing overpopulation in wildlife. "Wildlife professionals know that regulated trapping is not a threat to the survival of wildlife," says the publication. "Trapping and Conservation" pamphlets are free in single copies by requesting them by name from the National Wildlife Federation, 1412 16th St. N.W., Washington, D.C. 20036.

*Attention, Parents*. . .especially those of you with pre-schoolers that are "live-in" at your diggin's. The Virginia Affiliate of the National Society to Prevent Blindness has something for you and it is free. The "free" part is really not as important as what you get in the way of peace of mind by requesting and then putting to use a slick little publication entitled "Home Eye Test For Pre-Schoolers." It seems that about one out of every twenty preschool age child in this country has a vision problem. With all things considered, if these problems are not corrected the result could be unnecessary loss of sight. "For some of these children, those with 'lazy eye,' discovery and treatment before school age is necessary." The youngun's just don't have the experience and have no way of comparing "how they see" to how it really ought to be; consequently it is up to us grownups to "hep 'em." To begin, send for "Home Eye Test For Pre-Schoolers" by writing to Virginia Affiliate, National Society to Prevent Blindness, P.O. Box 2020 (Dept. C), 110 West Main St., Richmond VA 23216.




I have noted, with great interest, over the past ten years the tremendous increase in the sport of canoeing. My interest stems from the fact that in my youth I spent a good part of a number of summer vacations exploring the Canadian Boundary Waters of my native Minnesota. . so I empathize with anyone that is interested. In that regard the good folks at the Commission of Outdoor Recreation have whomped up a free, four-page brochure which they call "Virginia. . .a great place to." It is a dandy, handy guide to canoeing which covers a multitude of aspects of the sport which has really caught on in the Old Dominion. Request a copy from the Commission on Outdoor Recreation, 8th & Franklin Sts., Richmond VA 23219.

"Food and Fitness" is the title of a little gem which has been prepared by the Blue Cross and Blue Shield folks. This free publication dwells on the sensible approach to eating and actually lets a person exercise more than just will power. For your free copy write to Blue Cross, P.O. Box 27401, Richmond, Virginia 23279.

**. . .FOR YOUR BOOKSHELF**

Although it has been some time since I have expressed any degree of bubbly enthusiasm about the United States Postal Service, I ran across something lately that has caused me to change my tune somewhat. This is not to say that I'm "broke-out in a rash of DEE-lite" with the mail service, but I will say that those folks have come up with a dandy publication entitled "Stamps & Stories. . . The Encyclopedia of U.S. Stamps." This, the 6th edition, is some 250 pages long and, although it is a soft cover, the contents are printed on heavy, durable stock which sets off the subject matter in a delightfully dignified manner. "Stamps & Stories" covers the many different aspects and pleasures of stamps from Introduction to Stamp Collecting, Price Trends of Selected Stamp Issues, and Commemorative & Definitive Postage Stamps to Plate Number Block, Sheet and First Day Cover Prices, Specialty Collecting and First Day Covers. In addition, certain special stamps are pictured in color along with a bit of history pertaining to its subject matter, origin and appeal. As an example, three separate stamps were printed to commemorate Rural America. One in 1973 which depicted Angus and Longhorn Cattle, another in August of 1964 which commemorated the Chautauqua Centenary. That same year a stamp was issued as the Kansas Hard Winter Wheat Centenary. This little book is absolutely jammed with all sorts of usable information, including how stamps have skyrocketed in value over the years, with examples. It's a perfect gift and the cost is just $3.50 from the United States Postal Service. . .ask your Postmaster!

**. . .AND THEN**

"The need for food has always been a sharp goad to human intelligence. For untold ages, man has applied his wits to getting things to eat. All his acumen in this field will be demanded by the end of this century, when the world is expected to have two billion more mouths to feed." Royal Bank of Canada Monthly Letter.

# Personalities by Francis N. Satterlee

## Hal W. Myers, Jr.
### District Game Biologist

Hal Myers was "raised-up" in the community of Forks of Buffalo which is nicely nestled in the foothills of the Blue Ridge in Amherst County. His father, the Postmaster at the 'Forks' Post Offfice, also operated a general store and farmed about 100 acres. It was from this gentleman that Hal received his early training in hunting and the piscatorial art. Hal learned early on about the appreciation of wildlife and firearms safety and sportsmanship. When he was but a mere lad of ten years, Hal was allowed to go hunting under the watchful eye of his father and to carry a single-barrel Iver-Johnson 410 shotgun which the elder Myers had specially modified for the youngster.

Growing up and working on the farm and in the rural community had a lasting effect on Hal. Additionally he worked in a local cannery during summer vacations and supplemented his income by selling minnows. His graduation class at Pleasant View High School consisted of 13 people: ten boys and three girls and "a lot of happy memories."

Following graduation, Hal enrolled in a course at Virginia Polytechnic Institute in Blacksburg. This was during W.W. II. He was also in the ROTC program and during his second quarter was drafted into the U.S. Army. He eventually was assigned to the 76th Infantry Division as a BAR Combat Infantryman and saw extensive combat during the late stages of the infamous Battle of The Bulge and subsequent push to the Rhine River. Severely frozen feet caused his medical evacuation to hospitals in France, England and eventually in the U.S. before being discharged in 1945.

In 1949 Hal received a B.A. degree from Lynchburg College. For a time he worked at a variety of jobs until 1952 when he was employed by the Commission of Game and Inland Fisheries as Game Manager of the Pedlar Ranger District on the George Washington National Forest. He worked closely with C. H. "Kit" Shaffer, completed extra schooling and gained a wealth of practical experience. Hal served for a time as a Biologist Aide until assuming his current responsibilities as District Game Biologist in the Commission's Game Division. He feels that the most satisfying aspect of his work is being part of a very successful scientific game management program and working with wildlife, sportsmen and in the outdoors.

Mrs. Myers is the former Alice Davis from Amherst. She and Hal have 3 children, two boys and one girl, and they make their home in Amherst.

# Growing Up Outdoors

by Sandy Coleman

*Illustration by Dick Bernard*

## The Raccoon

Whether you live in the suburbs of one of Virginia's larger cities or in the country, there are, more than likely, raccoons in your neighborhood.

Though liked by many because of their amusing appearance and habits, they are as frequently a nuisance, causing farmer's to lose eggs and poultry and causing suburban dwellers to awaken to an overturned garbage can. Neither endears the raccoon to his victims.

His mask makes him resemble a bandit of old — and sometimes that is the way many would like to describe him. His head and body length ranges between 16 to 24 inches, with a tail of 8 to 16 inches. The average weight is somewhere in the mid twenties, with weights in the fifties and sixties sometimes recorded. His fur is grey to black with black rings on the tail and that distinctive mask over his eyes. His feet have long toes and the front paws are almost hand like — and the raccoon can almost use them as well as humans can!

Raccoons eat a wide variety of both plant and animal food. Earthworms, insects, frogs and other small creatures are included in their diet, as well as crayfish and shellfish. The eggs and chicks of birds, both ground and tree nesters, are also part of the raccoon's diet.

A male raccoon will mate with several females during January and February, with the young being born in the spring, sometime between April and June. The young weigh about 2½ ounces at birth and are clad in a coat of fuzzy fur, already displaying the black mask. Their eyes open in 18 days and at about 10 weeks they emerge from the nest for short trips with their mother. The trips get longer as the young learn to forage for themselves, but they stay with their mother until they are about one year old. The average life span for the raccoon is about 13 years.

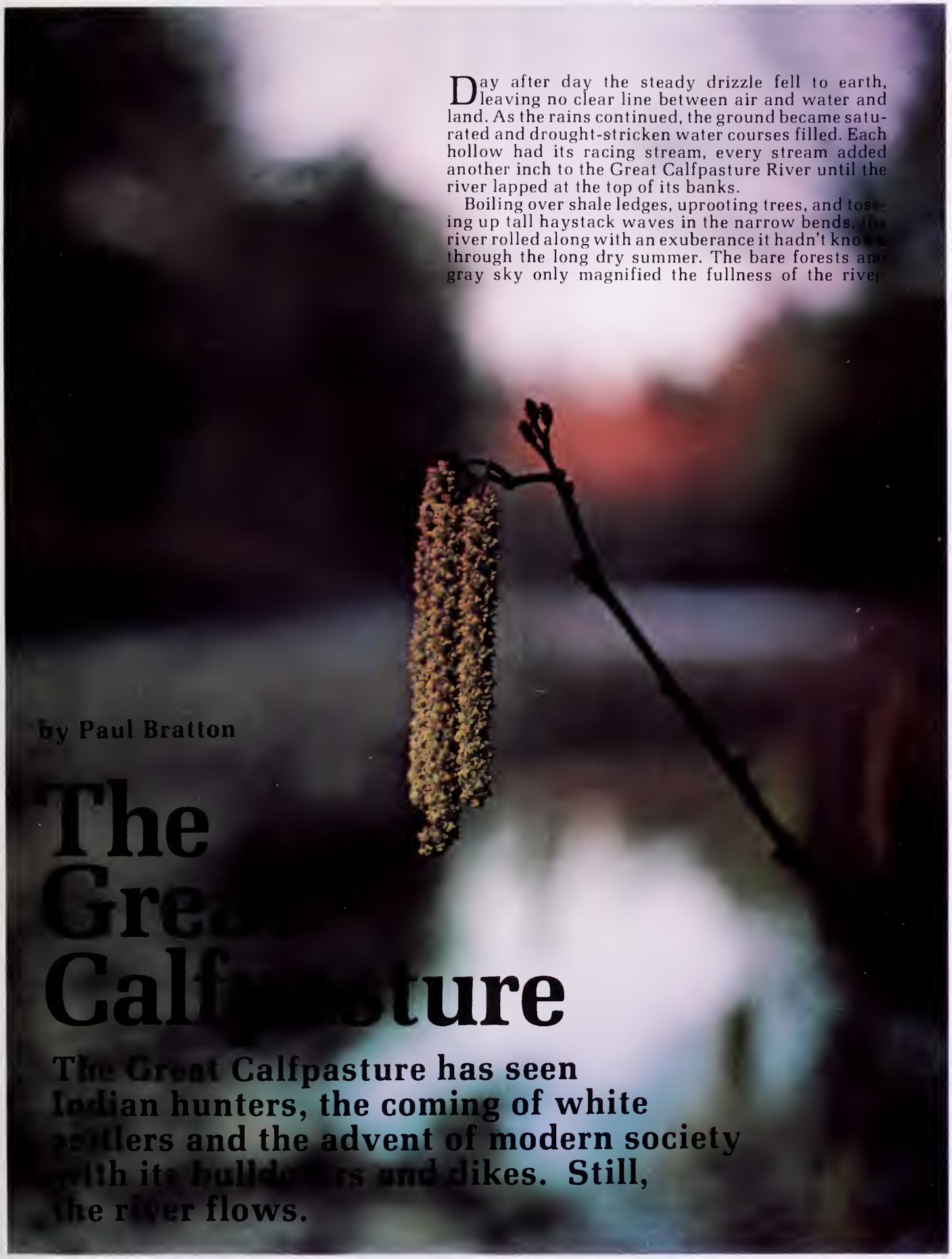
Because raccoons in captivity — and elsewhere — can be seen dipping their food in water before they eat it, the myth has sprung up that the raccoon is washing his food. For many years, naturalists accepted this theory. However, current thinking does not support this. Although, they do dunk their food, it appears that this is just a part of the touching and feeling process with which raccoons approach their food. They use their extremely dextrous forepaws in this action.

Raccoons are an integral part of American history. In Tennessee in the 17th Century, they were used as currency. Davy Crockett, the "King of the Wild Frontier" was a well-known 'coon hunter and was pictured in the movies as always wearing a 'coonskin hat.

Although they are not prized as a fur today, they have been trapped and hunted for their coats by both Indians and Europeans ever since they have lived in the New World.

Raccoons are a match with most predators and will usually emerge on the victorious side in any bout with a dog. Bobcats and bears are about the only animals in Virginia that could get the better of a raccoon.

If you hear your trash can overturn in the night, don't be so quick to blame the local roving dog. It just might be a raccoon!



Day after day the steady drizzle fell to earth, leaving no clear line between air and water and land. As the rains continued, the ground became saturated and drought-stricken water courses filled. Each hollow had its racing stream, every stream added another inch to the Great Calfpasture River until the river lapped at the top of its banks.

Boiling over shale ledges, uprooting trees, and tossing up tall haystack waves in the narrow bends, the river rolled along with an exuberance it hadn't known through the long dry summer. The bare forests and gray sky only magnified the fullness of the river.

by Paul Bratton

# The Great Calfpasture

**The Great Calfpasture has seen Indian hunters, the coming of white settlers and the advent of modern society with its bulldozers and dikes. Still, the river flows.**

Familiar rapids might be gone completely, lost under the flood, or might be transformed into a seething cauldron of foam, rock, and water. Wild ducks rested in the newly created side chanels, while in the heart of the flood the bass and trout, too long confined to small, clear pools, enjoyed a vast watery domain.

As is typical of headwater rivers, great fluctuations in water level are common on the Calfpasture River. In the midst of a summer drought, the sharply reduced flow sometimes disappears under the rock and gravel of the river bed, then after heavy rains the river swells quickly, covering the fords and threatening low bridges.

For some it might be enough to enjoy only one aspect of the river: a familiar bass hideout, favorite swimming hole, or a fast canoe ride on the flooded river. But those who would know more must eventually trace the water courses ever higher until the source is discovered, in some mountain hollow where shaggy hemlocks and yellow birches shade the first trickles of what will become the river.

The seeker of a river's source is able to pick and choose to a certain extent, finding the source most appealing to his own imagination. For me the Right Prong of Ramsey's Draft leads to the source of the Calfpasture. Called Hiner Spring, it lies in a fern-filled bowl between the naked rock backbone of Hardscrabble Knob and the shrubby tangle of bear oak cloaking Tearjacket Knob.

The spring itself has been improved with rock sides, creating a constant five gallon reservoir; this, at least, is one of man's most benevolent additions. The reservoir may have been constructed by the fire lookout who manned a small tower of Hardscrabble Knob during the 1930's, living in a log hut on top. Today the visitor is more inclined to believe the mossy rocked-in spring is a natural geological phenomenon.

Whoever was the constructor of the rock lining, the spring has long attracted men and wildlife. It may even have been the center of an Indian hunting camp when a young brave went into the mountains to prove his worth against the black bears that still roam the ridges.

Attractive as the area appears for a camping site, it is not a restful spot to spend a night. Throughout

*The Calfpasture flaws thraugh some of the mast beautiful Virginia cauntryside.*

the twilight and into the dark hours wild animals come to drink, rustling through the ferns as they follow the ancient trails from the ridges. The noisiest are the deer, pawing the ground and snorting when they discover someone encamped in their territory. But the most troublesome are the red squirrels and chipmunks who think nothing of chewing through a nylon pack to investigate the smell of some exotic food.

Leopard frogs live in and about the highest water sources, sharing the upper reaches with caddis larvae in their pebble cases and other small stream insects adapted to the turbulent life. As the water descends an occasional native trout might be seen finning in some bathtub size hole, precariously at home in the tumbling mountain waters.

For six miles Ramsey Draft flows through its secluded hollow where a virgin forest of hemlock and beech stills reigns. This section is contained in the George Washington National Forest as are many of the streams that feed the Great Calfpasture River. Even as the stream leaves its protected hollow and flows through farms and by an occasional cabin, man's impact is light.

*Raccoon are one of the many species that live along the banks of the great river.*

Ramsey's Draft joins the Great Calfpasture itself in Deerfield Valley, doubling the river's size. The waters are too warm here for trout. Smallmouth bass, rock bass, and fall fish are most common as the river passes through the mixed farmlands and forests of the valley.

Though the Calfpasture is not a wilderness river, it has wild sections: places where the hunter can take an early morning stand while waiting for a well-fed buck to cross from the corn fields to the forest, or watch for wild turkeys leaving their roosts in the tall river bottom pines to forage on the oak ridges. At other places the river flows near the state roads, Routes 629 and 600, that follow its valley. There beavers and great blue herons might be found only a few feet from the highway.

Weaving a sinuous course through its mountain valley in western Augusta County, the river retains its rural character for most of its length. Only when it reaches the town of Goshen does the blight of industrial pollution mar the river. Factories and runoff from abandoned mines discolor and disfigure the river only a few miles before the Great Calfpasture and Little Calfpasture join to form the Maury River.

From their confluence, the Maury tumbles through the rugged grandeur of Goshen Pass and across the Great Valley of Virginia to the James — but that is a story for another time. The main body of the Calfpasture lies upstream in the mountain valley, seemingly little changed by the rush of civilization.

It was during the 1740's that the first white settlers came into the Calfpasture River Valley. They found no Indians living in the valley, though the native Americans had long used the valley as a hunting ground and buffer zone between the Cherokee to the south and Iroquois Confederation on the north. Occasional arrowheads are still turned up in the river bottom corn fields, but little is known about the red men who first lived and hunted in the gentle river valley.

Only a little more is known about the Scotch-Irish who first settled the valleys of western Virginia. There are the records of land patents and court proceedings, the various legal documents pertaining to their living and dying. But except for scattered names and dates there is little to define the thoughts and lives of those first settlers. Most often the historical accounts of the first settlers reflect more of the writer's attitudes than those of the settlers.

Just as we can never really know what life was like for those pioneers, we can only imagine what the river was like when the first settlers saw it. From its name we know that wild buffalo and their

*The Calfpasture flows through this beautiful mountain valley in Augusta County.*

calves pastured beside its waters. But did it brim with arm-length native trout? Were there alternating floods and drought then too, or did the mossy virgin forest even out the river's fluctuations?

At first glance human activities on the pristine and unsullied upper Calfpasture appears the ideal merging of man with nature. But today no river is unaffected by man and his activities. The stripping of forests and plowing of pastures over the more than 200 years of man's occupation has dumped most of the topsoil into the water courses. Runoff of fertilizers, pesticides, and road chemicals are a threat to every inhabited river.

Only a few years ago a VEPCO dam was proposed on the Calfpasture River. The dam would have inundated seven miles of the river in Marble Valley. Fortunately, geological faults were discovered that made the area unsuitable for a pumped storage dam, but there is at present nothing to stop another dam on the Calfpasture.

Dredging and channelizing by both government and private individuals has done the most obvious damage to some sections of the river. Bulldozers, too often seen as a panacea for every river-associated problem, have usually been set loose with no safeguards or prior planning. If high water flooded a road, a bulldozer was sent into the river, sometimes only increasing the risk of flooding next time. Owners of vacation cabins have hired bulldozers to gouge out swimming holes and construct dikes, thereby silting up the river, blocking the passage of fish, and increasing the likelihood of future flood damage.

In a few places the river has been gouged and scraped so often that the original course and configuration are unrecognizable.

Fortunately, some of these abuses are being corrected. The Federal Water Pollution Control Act of 1972 places restrictions on most uses of heavy equipment in the riverbed. Administered by the Virginia Water Control Board and the Army Corps of Engineers, it provides some basic environmental protections, along with professional advice for landowners who need help with flood protection.

In a report issued in 1972, the Virginia Commission of Outdoor Recreation recommended the Calfpasture and Maury Rivers for the state's Scenic Rivers System. Such designation would help preserve the river in its natural state and provide protection from dams and other threats to the riparian environment.

In addition, there is presently a bill before Congress, H.R. 7970, that would give full wilderness protection to the 20,175 acres of mountainous National Forest land at the head of the Calfpasture's watershed. Four other wild areas in Virginia's National Forests would also be protected under the bill. The passage of the bill for the Ramsey Draft Wilderness will assure the continued purity of the headwaters of the Great Calfpasture River.

The river is many things, revealing a different side to each person. To some it is only a ditch with water flowing through it — an obstacle and a bother, they would have it bottled up and taken away. Others know and enjoy the river for the fishing and swimming or perhaps for a summer picnic site.

But there are a few who catch a glimpse of the river in all its complexity. They know the resources that bring men to the valley, the rich bottom lands, thriving forests, and abundant wildlife are all gifts of the river. They have some knowledge, however inadequate, of the multitudes of unseen lifeforms that inhabit the waters. They know every threat to the river threatens all life and finally threatens man too.

For now the Great Calfpasture River flows free and pure, but the only way it can remain so is if those who care about the river act to protect it.

# Outdoor Notebook

## Island Backpacking

Backpacking afficionados understandably have an affinity for the rugged, beautiful mountainous terrain of western Virginia, but the backpacking possibilities of the coastal Eastern Shore should not be overlooked. The National Park Service on Assateague Island has three hike-in campsites designed for backpackers, and they are connected via a trail which covers the length of one of the most beautiful unspoiled barrier islands on the east coast.

Although hiking in the mountains has its rewards, there is nothing more exhilarating than to hike along a deserted beach, a cool wind blowing off the ocean, gulls soaring overhead, and sanderlings playing tag with the incoming surf. There may even be a wild Assateague pony.

At Assateague you can hike for miles without seeing a sign of civilization. In a time when so many coastal beaches are dotted with condominiums and fast-food restaurants, the experience of seeing nothing but beach and surf is unique and invigorating.

A stroll along a beautiful beach might sound like a piece of cake for hikers more accustomed to the mountainous terrain of western Virginia, but carrying a 35-pound backpack through sand can be a formidable chore. Most backpackers are at home in wooded areas, where changes in altitude may take their toll on the energy supply, but where the footing is, nevertheless, usually firm. Hiking in soft sand can be like an endless uphill walk, and the weight of the backpack compounds the problem.

Not that it's all bad. Once you begin your hike, you'll get the hang of finding hard, well-packed sand and avoiding the soft snow-like stuff where you sink to your ankles. Generally, the sand near the breakers is much harder than the dry sand near the dunes.

Going barefoot in the sand is a refreshing experience but one that should be savoured when the hike is over. Backpackers are advised to wear sturdy shoes and comfortable socks while hiking. Barefoot hiking sounds refreshing, but blisters can develop with amazing swiftness and shells can cause painful and disabilitating cuts on the bottoms of your feet.

Another necessary item for beach hikers is a good insect repellent. While insects can usually be avoided during the day by hiking along the ocean, greenhead flies, mosquitoes, and gnats can be fierce from May until the first killing frost. Insects can even be bothersome along the surf when the wind is coming off the land, and they can drive you bananas at night when the breeze drops.

Hikers are also advised to wear a wide brimmed hat and other items to protect against windburn and overexposure to the sun. Also bring plenty of drinking water, especially during warm spells.

The ocean beach can be a harsh environment for hikers. Backpackers should bring a tent or other shelter to protect them from blowing sand, rain and heavy condensation brought by cool night temperatures and ocean spray.

The wild ponies on the island are a popular attraction, and they are often seen on the beach in the summer. Although they might appear friendly, the ponies can bite and kick, so hikers should enjoy them from a distance.

The park services three hike-in sites which cover both the Maryland and Virginia portions of the barrier island. Campsite One is four-and one-half miles south of the park service north beach parking area in Maryland. Site Two is nine-and-one-half miles south of Site One and 11 miles north of the Virginia ranger station. It is adjacent to the stateline fence. Site Three is a 13½ mile hike south of Site Two near the hook at Tom's Cove.

These three areas are the only spots where camping is allowed, and the trek between sites can be strenuous, so backpackers should be aware that they are in for more than just a casual stroll.

Advance registration must be made for all three sites 30 days or less before the hike. Reservations can be

made by phone or letter. At the Virginia section, write to Virginia District Ranger, Assateague Island NS, Box 38, Chincoteague, VA 23336. The phone number is (804) 336-6577.

In Maryland, write to the Superintendent, Assateague Island NS, Route 2, Box 294, Berlin, MD 21811. The phone number is (301) 641-1331.

The purpose of the registration is to enable the park rangers to reach you in the event of a family or park emergency and to assist in protection of your vehicle while it is left unattended.

Check-in deadline is 4:30 on the day of arrival. Reservations will not be held after this hour.

A portable comfort station, garbage containers, and a table are provided at each site. Water and shelter are not available, so hikers are advised to carry at least a quart of water for each day they plan to be on the trail. More water should be carried during hot weather.

But no matter when you go, you'll find island backpacking a different hiking experience. If you're a veteran of mountain trails, a beach trip will be a whole new ball game for you. Just don't forget the insect repellent. —*Curtis J. Badger*

# Hatchery Fish Kill

Personnel from the Game Commission's Fish Division and representatives of the State Water Control Board are continuing their investigation into the cause and ultimate effect of the oil leak which caused the death of more than 500,000 trout at the Commission's Hatchery at Marion, January 2, 1980. The fish kill occurred when leaking oil from a neighboring home fuel tank found its way into the Game Commission's Marion Fish Hatchery's water supply. As a result, all of the brook and brown trout and one half of the rainbow trout fingerlings being raised in the hatchery for stocking in Virginia waters for the 1981 trout season were wiped out. Additionally, some 400,000 trout (larger fish which were scheduled for stocking in the early months of 1980) were affected and showed signs of distress in the holding ponds at the hatchery. If these larger fish survive, the 1980 trout season will not be affected by the disaster.

Jack Hoffman, Chief of the Commission's Fish Division stated that, "more than the normal amount of mortality is still being experienced in the fish which survived the accident. We have completed the short term damage evaluation of the incident and the long term effects are still being studied. It is hoped that we can replace the fish lost for the 1981 season stocking, but to date this has not been accomplished. We valued those fingerlings of which I speak, the more than 500,000 brown, brook and rainbow which were lost initially, at more than $124,00."

# Wildlife Week

"Save a Place For Wildlife" is the theme of the 1980 observance of National Wildlife Week which will be observed throughout the United States March 16-22, 1980. Traditionally, during that period members of the National Wildlife Federation, state affiliate organizations such as the Virginia Wildlife Federation and thousands of sportsmen-conservationists, all of whom are interested in wildlife, join together in the observance.

Observance of 1980 Wildlife Week by Virginia Governor John N. Dalton came in the form of a Certificate of Recognition, which reads as follows:

*By virtue of the authority vested by the Constitution in the Governor of the Commonwealth of Virginia, there is hereby officially recognized* National Wildlife Week 1980. *We share this planet with a wide variety of wildLife, many living close to our own homes, others dependent upon a proper sharing of our natural heritage of field, stream and woodland. In recognition of this joint stewardship, the National Wildlife Federation and the Virginia Wildlife Federation and the Virginia Commission of Game and Inland Fisheries observe the period March 16-22 as* National Wildlife Week, *and I call the responsibility it suggests to the attention of all Virginians, old and young.*

# Back Bay Permits

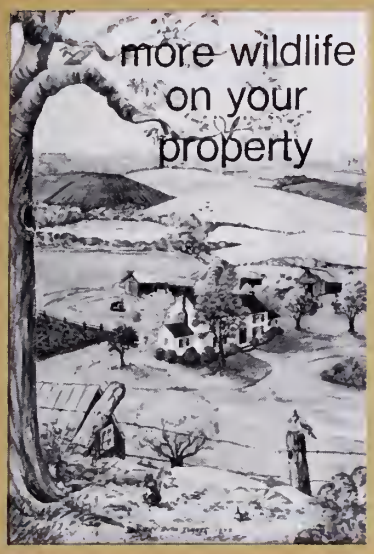
Permanent full-time residents of Currituck Banks, North Carolina, will continue to be allowed to drive through Back Bay National Wildlife Refuge under an interim rule issued by the Interior Department's U.S. Fish and Wildlife Service. But owners of vacation homes will have to rely on public roads instead of the shortcut across the refuge beach, under the interim rule which became effective January 1, 1980.

The Service had previously announced its intent to end all access across the refuge after December 31, 1979, because of damage to the refuge environment from heavy vehicle traffic. After a further review of the effects of a complete beach closure, however, the Service has issued an interim rule allowing limited access under permit for the following:

1. Permanent full-time residents of the Currituck Banks between the Virginia State line and Corolla, North Carolina, who can furnish proof of residency prior to December 31, 1976.
2. Commercial fishermen and their employees who meet prescribed criteria.
3. Employees of Virginia's False Cape State Park and their dependents and designated visitors of employees who reside in the park.
4. Private vehicles used in medical emergencies.
5. Military, fire, police, emergency or other official vehicles and public utility vehicles on official business.

Owners of improved property who are not full-time residents will not be allowed to drive across the refuge under these regulations.

Copies of the Draft Environmental Impact Statement are available for public review at city libraries in Virginia Beach and at the Currituck County Courthouse in Currituck, N.C. Those individuals and organizations who have already requested copies will receive them by mail. Additional copies may be received by contacting: U.S. Fish and Wildlife Service, One Gateway Center, Suite 700, Newton Corner, Mass. 02158, Attn: David E. Janes, Office of Realty.




# Attracting Wildlife

Spring is the time of year when our thoughts turn to. . . well, if not romance, then to making the yard or farm more attractive to wildlife.

The Virginia Commission of Game and Inland Fisheries has available a booklet designed to put at your fingertips just about everything you need to know to improve the wildlife habitat on your land. Best of all, the booklet *More Wildlife on Your Property* is free for the asking.

Write to: Virginia Game Commission, Publications Dept., P.O. Box 11104, Richmond, Virginia 23230.

# New Boat Ramp

Larry Hart, Chief of the Lands and Engineering Division for the Commission of Game and Inland Fisheries, announced recently the opening of a new boat ramp in Campbell County on the Staunton River. The new boat ramp is located near Long Island Community off Route 761 and will provide much needed public access for the striped bass fisherman and canoeist alike along that section of the Staunton River designated as a State Scenic River.

Mr. Hart remarked that the project was a cooperative effort between the Commission of Outdoor Recreation, which helped provide part of the funding, and the Commission of Game and Inland Fisheries.

# Coming Next Month

**EAGLE BANDING**
A Look at Research Currently Underway in the Commonwealth on the Future of this Precious Species

**DEVIL'S MARBLEYARD**
A Unique Natural Area in an Equally Unique Setting

**KERR CRAPPIE**
Many Think this is Just About the Best Crappie Fishing Around

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# On the Waterfront

Edited by Capt. James N. Kerrick

## Check More Than the Price

As the costs of boats continue their inexorable climb upward, there are considerations worth your examination. Some will help reduce your initial package costs, others reduce everyday operational costs, and one very important development will make for much safer boating in years to come.

Much of the two cost saving elements are due to increasing production and improved design characteristics of aluminum boats. Simply enough, they are generally lighter in weight. For instance, in a recent test on some calm Florida waters a new Grumman entry, the 4.4m (14'6"), weighing just 227 pounds and powered by a brand new 25-horsepower Evinrude with 690 pounds of people and gear aboard, maintained a speed of over 27 miles per hour. From experience a comparable boat of fiberglass would weigh at least 260 pounds and require more horsepower to attain that same speed. More horsepower means more dollars.

In operation, test results showed the lightweight Grumman with the 25 horsepower motor used on 2.04 gallons per hour at 80% throttle and yet ran along at 21-plus miles per hour. These test results may very depending upon your own operating techniques and other existing conditions.

These figures do, however, lead us into the possible operational savings available from the lighter weight aluminum boats now on the market. For if one could get 21 miles per hour while burning just 2.04 gallons an hour, one could run offshore for 10 miles and back at that speed and still have 4 gallons in his standard six gallon tank for cruising or trolling. Incidentally, the same test showed that this Grumman 4.4 at 20% throttle moved along at 5 miles per hour while burning less than 7/10th of a gallon per hour. Your expenses can be reduced by asking good questions before you buy.

The final development you must investigate before buying a new small boat this year is the U.S. Coast Guard's regulation that requires all new boats under 20 feet to have level flotation.

This regulation means that if you and friends or family swamp your new boat, you and it will continue to float even if your boat is full of water, with the provision, of course, that you have not overloaded the boat. Have aboard no more weight than the people and gear capacity for which the boat has been rated. A boat produced by a reputable manufacturer, such as Grumman, will have a capacity plate well displayed. Be sure you check it out.

Should you want additional information about level flotation and what it means to you, or more about Grumman's boat, just drop Grumman a line at Marathon, New York, 13803. They'll send you free material about boats and boating.

### NEW BOATING SAFETY EQUIPMENT REQUIREMENT

Effective January 1, 1981 all boats carrying six or less passengers for *hire* and all *recreational* boats 16 feet or greater in length shall be equipped with visual distress signalling devices at all times when operating on coastal waters. Additionally, boats *less* than 16 feet will be required to carry visual distress signals when operating on coastal waters at night.

This regulation applies to all coastal waters and those rivers two miles wide at the mouth and up to the first point the river narrows to less than two miles. Inquiries may be addressed to Fifth USCG Headquarters, Portsmouth, Virginia 23705, Telephone (804) 398-6202.

# In Nature's Garden

BY ELIZABETH MURRAY

Illustrated by Lucile Walton

## Morning Glory

It is hard for me to extol the beauty of the morning glory when I have just come in from weeding my butternut squash patch. Down there, it is much more tempting to think of the plant by the common English name of bindweed because that describes it so suitably. It is a weed there, something in the wrong place, which is binding the poor squash vines, and because I am overdue with my weeding, it is growing prolifically and enthusiastically, to the detriment of my crop. However, in fairness, I did step back once, and take the time to admit that, anywhere other than in my vegetable garden, the flowers were lovely.

Morning glory belongs to the bindweed family, Convolvulaceae, and we have two main genera here, *Convolvulus* (or *Calystegia*) and *Ipomea*, the former mostly introduced from Europe, the latter from tropical America. The species shown here is the ivy-leaved morning glory, *Ipomea hederacea*, characterized by leaves which are deeply lobed into three parts (ivy-like).

The flowers are trumped-shaped, up to two inches long, sky-blue when they first come out and changing to a rose purple as the flower gets older, with a white throat. Occasionally the flowers are pure white. In a closely related species, *Ipomea purpurea*, the common morning glory, the flowers may be blue, red, pink, purple, white, or variegated. They are slightly larger than those of the ivy-leaved morning glory and the leaves are unlobed and heart-shaped. There is also a smaller white-flowered species, and one with scarlet blooms.

The wide variety of flower shades gives our fence rows and old fields a colorful appearance in summer and fall when the flowers are at their height. The name morning glory is apt, since the blooms open in the early morning and, if the day is bright, close up during the middle of the day. If the weather is dull, they may stay open all day, unfortunately too often the case during the rainy weather we have seen so much.

The name *Ipomea* comes from the Greek word for 'worm', *ips*, and *homoios* meaning 'resembling' and of course refers to the twining habit of the plant. It is a very vigorous and fast-growing vine, particularly in wet weather or moist habitats. The name of the family, Convolvulaceae, comes from the Latin verb *convolvere*, 'to entwine'.

The main native species here of the genus is *Ipomea pandurata*, the wild potato-vine. The yam-like root of this species was used by the Indians as a starchy vegetable from late fall to spring when the root is well-filled. However, fresh roots are reported to be purgative, so it would be advisable for those seeking sweet potatoes to stick to the ordinary cultivated species *Ipomea batatas*. The seeds of all morning glory plants are poisonous, so it is as well to stay away from them, too.

Ivy-leaved morning glory is an annual, growing new plants each year from seeds made in the late fall of the preceding year. The vines achieve an astonishing amount of growth, considering they do it all in a single season. From the weeder's point of view, the only advantage in the annual nature of the plant is that the roots are not as tenacious as those of a perennial, and hence easier to pull up! However, it is rewarding to overcome our provocation at the places where we would rather not have morning glory — and admire its varied and showy flowers in locations where it is causing no trouble.

JOHN W. TAYLOR

## Bird of the Month

by John W. Taylor

# The Mockingbird

Mark Catesby, the colonial naturalist who lived for awhile in Williamsburg, was the first to describe the mockingbird. He wrote an account of the bird, and provided an illustration of it, in his *Natural History of the Carolinas*, published in 1731. Catesby called it the "Mockbird of Carolina" and sent notes and specimens to Carl Linneaus, the eminent taxonomist in Sweden. Linneaus gave it the scientific name *Mimus polygottos*, "the many-tongued mimic."

Tales of the mocker's remarkable powers of mimicry fascinated the Europeans of that far-off time, over 250 years ago. Some considered it the most remarkable of all the strange and wonderful creatures found by naturalists in the new world. The learned men of the Royal Society in London held seminars about the bird and its powers of mimicry. Caged specimens were highly prized, fetching over one hundred dollars. The famous Nuttall, referred to the mockingbird as "America's natural wonder" in his book on American birds, published first in 1832.

Though such an accolade might today seem somewhat excessive, it is certainly understandable. The vocal powers of the mockingbird are without equal. Other birds are adept at mimicry: parrots, mynah birds, even the common crow; but none has the range and repertoire of the mockingbird, and none has such an admirable song of its own. And none pours forth its music with such passion and abandon.

Can the mocker call forth any bird song it wishes to imitate? Some ornithologists believe it can. One authority claims to have heard a mocker that changed its tune 87 times in 7 minutes, and he recognized 58 bird species among the imitations given. The noted E.H. Forbush held the unqualified belief that "perhaps there is no song. . .the mockingbird cannot imitate to perfection." Ridgway wrote that "the vocal powers of the mockingbird exceed both in imitative notes and natural song, those of any other bird."

Sounds other than bird voices excite the mocker's powers of mimicry. Individual birds have been known to whistle like a policeman, squeak like a wheelbarrow, squeal like a pig, bark like a dog and croak like a frog. One seemed to delight in giving the eerie moan of a distant freight train.

The callnotes of the mocker recall none of the sweetness of its song. The tone, in fact, is quite the opposite. There is a harshness, a scolding quality about the loud "chuck" even when the bird does seem to be angry.

In the southern parts of its range, the mockingbird may sing at any time of the year. Though in full song only during the courting and nesting time, it may often break into melody on warm autumn days and even during December and January. Farther north, it is stilled by the chill of winter.

Indeed, the mocker does not seem at home anywhere north of Dixie. Until recent years, few of them crossed the Mason-Dixon line. Coues and Prentiss, in their "Birds of the Washington, D.C. Area" (1883) call the mockingbird a "rare summer resident" and considered Washington the northern limits of the bird's range. Nowadays, it is fairly common in parts of New England.

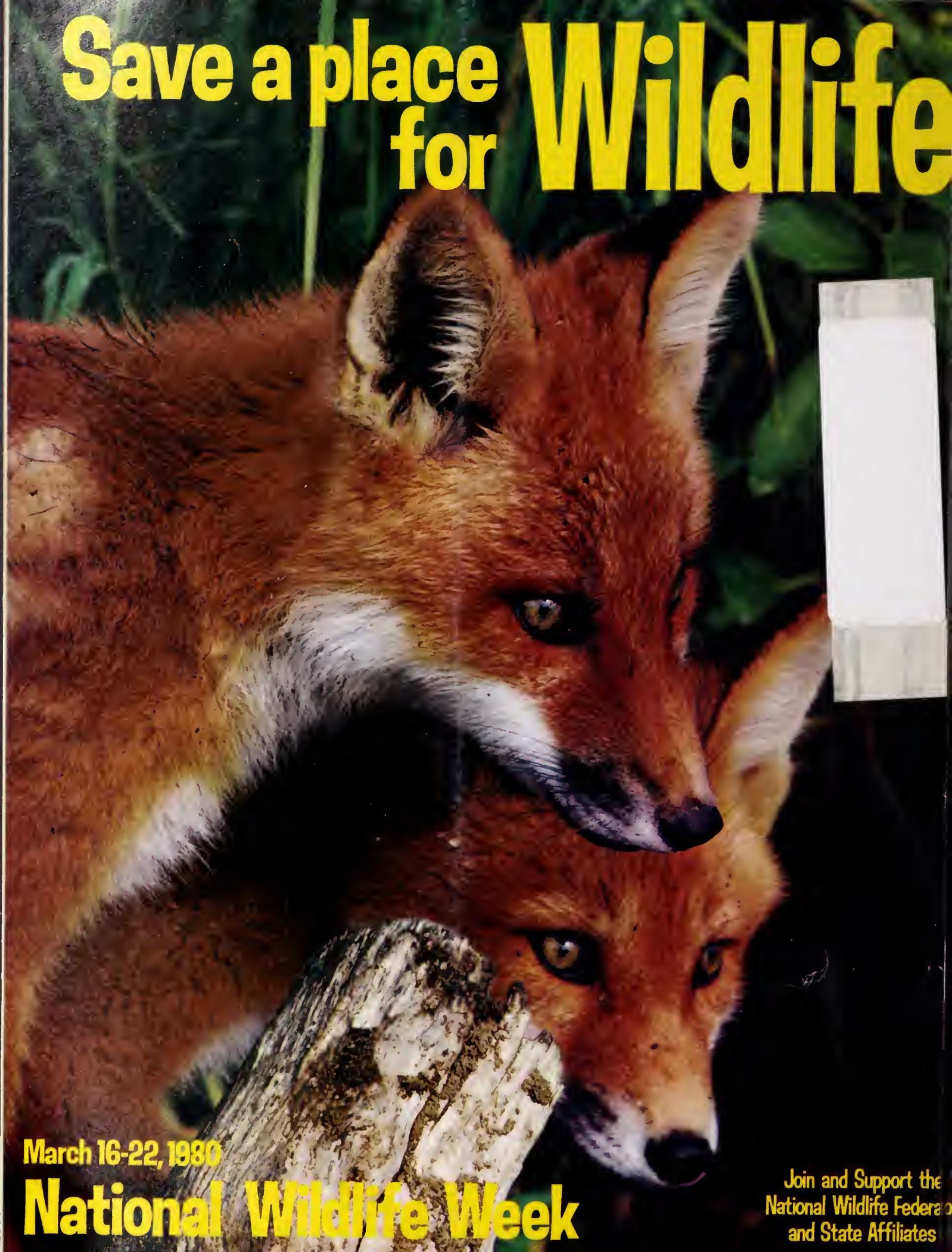
Whether this range extension is an overflow from the south, or a response to warmer winters is not certain. These northern birds seem to be somewhat migratory, but there is no definite pattern of movement. Most mockers are sedentary, but individuals have been shown, by banding, to have moved considerable distances. One banded in New Jersey in November 1932 was found dead at Shadyside, Maryland in May, 1935.

The period of breeding seems to vary but little throughout the bird's range. Nest-builting is usually underway by mid-April along the mid-Atlantic coast. Florida birds begin a bit earlier, and those to the north a week or two later.

Materials used for the nest seem to depend largely on what is available, but in most cases large dead twigs are basic to its construction. Grasses and smaller twigs form the lining, the completed structure being a bulky affair, not neat and compact.

The mocker likes to nest near human habitation. Often evergreens close against a house are selected, or cultivated shrubbery decorating a lawn. In wilder locations, away from man's dwellings, cedar trees in pastures or wood edges are choice sites.

Nest building can take but two days, but this is exceptional. Usually it requires several more. The eggs are laid, one a day, immediately after the nest is finished. Another two weeks are necessary for incubation and care of young. Thus it takes only about three weeks for a pair to bring a family of youngsters to the flying stage. So there is time for two, possibly three broods, each season. In Virginia, the extremes recorded for nests with eggs are April 16 and September 27. The peak of the nesting season is from late April though July.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